ADLINK Solutions for Machine Vision

Overview

Machine Vision is a field of engineering that encompasses computer science, optics, mechanical engineering, and industrial automation. Industrial machine vision applications today offer higher productivity, flexibility, reliability, and are capable to perform more complicated inspection tasks.

ADLINK provides a series of PCI Express® (PCIe) products for industrial machine vision applications. The PCIe bus provides high-bandwidth and robust point-to-point interconnects, and complete software compatibility with the existing base of operating systems, PCI drivers, and software. The PCIe bus also provides a dedicated link for image data transmission.

A typical computer-based machine vision system includes cameras, a frame grabber card, and the computer system. The camera interface is the transmission protocol between the camera and computer system. ADLINK provides several types of frame grabber cards, including:

Camera Link®

■ **PCIe-CML64/PCIe-CPL64**

- Noise Reduction: The minimal low voltage differential swing (LVDS) signal of the Camera Link® specification increases image throughput between the frame grabber, cable, and camera.
- Support for Line Scan Cameras: Camera Link® offers the absolute camera control, serial communication, and data streaming methods ideal for line scan applications. Most line scan cameras available today already support Camera Link®.

Frame Grabber Selection Guide

	Digital				
Model Name	**PCIe-FIW64**	**PCIe-FIW62**	**PCIe-CPL64**	**PCIe-CML64**	**PCIe-GIE62**
Standard	IEEE 1394b	IEEE 1394b	PoCL (Power over Camera Link)	MDR26 x 2	RJ45 x 2
Connector Interface	IEEE 1394b x 4	IEEE 1394b x 2	MDR26 x 2	Camera Link	Gigabit Ethernet Vision
Resolution	Depends on camera specification	Depends on camera specification	Depends on camera specification	Depends on camera specification	Depends on camera specification
Form Factor	PCIe x4	PCIe x1	PCIe x4	PCIe x4	PCIe x4
Max.Video Input	4	2	4	1	2
Max. Frame Rate	Depends on camera specification	Depends on camera specification	Depends on camera specification	Depends on camera specification	Depends on camera specification
TTL I/O	√	-	√	√	√
Area Scan Camera	√	-	√	√	√
Line Scan Camera	-	-	√	√	-
Color Camera	√	√	√	√	√
Camera Tap	-	-	-	8-tap	-
Pixel Depth	Depends on camera specification	8 to 10-bit	8-bit, 10-bit	8-bit, 10-bit, 12-bit, 24-bit	Depends on camera specification
Note	-	-	-	-	-
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IEEE 1394

■ PCIe-FIW64/PCIe-FIW62

- Plug-and-play operation and easy maintenance
- Power over cable for reduced wiring

Gigabit Ethernet

■ PCIe-GIE62

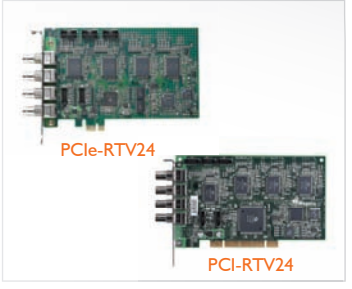
- Long Cable Length: Gigabit Ethernet cables up to 100 M
- Low Cabling Cost: RJ-45 Cat-5e cables provide a competitive price for vision applications

Analog

■ PCIe-RTV24/PCI-RTV24/PCI-MPG24/cRTV-24/cRTV-44

- Real-time Signals: No network latency or protocol overhead
- Reduced CPU Workload: The frame grabbers implement direct memory access (DMA) solutions that rearrange data for efficiency.
  The transmission of image data from the frame grabber to the memory of the host PC is executed without utilizing any CPU resources of the host system.

Analog



Model Name	PCIe-RTV24 / PCI-RTV24	cRTV-24 / cRTV-44	PCI-MPG24
Standard	Color (PAL/NTSC), Monochrome (CCIR/EIA (RS-170))	Color (PAL/NTSC), Monochrome (CCIR/EIA (RS-170))	Color (PAL/NTSC), Monochrome (CCIR/EIA (RS-170))
Connector Interface	BNC x 4	BNC x 4	BNC x 4 (extension cable)
Resolution	640 x 480 (NTSC/RS170), 768 x 576 (PAL/CCIR)	640 x 480 (NTSC/RS170), 768 x 576 (PAL/CCIR)	Full D1: 720 x 480 (NTSC), 720 x 576 (PAL)
Form Factor	PCIe x1 / PCI	3U/6U cPCI	PCI
Max.Video Input	4 - 16*	4	4
Max. Frame Rate	120 fps	120 fps	120 fps
TTL I/O	√	√	-
Area Scan Camera	√	√	√
Line Scan Camera	-	-	-
Color Camera	√	√	√
Camera Tap	Single-tap (PCIe-RTV24)	Single-tap (cRTV-44)	Single-tap
Pixel Depth	8-bit	8-bit	8-bit
Note	-	-	MPEG4
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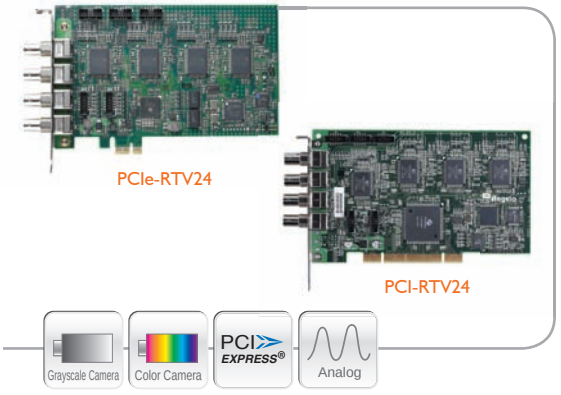
* RTV-E4 four channels extension board (optional)

PCIe-RTV24 / PCI-RTV24

4-CH PCI Express® / PCI Real-time Video Capture Cards for Standard Cameras



Features

- PCI Express® x1 compliant (PCIe-RTV24) , up to 120 fps
- Four color video digitizers operating in parallel
- Color (PAL / NTSC), monochrome (CCIR / EIA) camera supported
- Up to 16 channels extension
- On-board TTL I/O lines
- Built-in watchdog timer
- User-friendly ViewCreator utility
- Software trigger supported

Applications

- PC-based surveillance systems
- Digital Video Recorder (DVR)
- Factory monitoring systems
- Machine vision inspection systems
- Scientific research instrumentations
- Medical research instrumentations

Software Support

Windows® Platform

- Available for Windows® Vista (64/32-bit)/XP/XPe
- Available for Microsoft® DirectX®
- Recommended programming environments: C#/.NET/ VC++/VB/C++ Builder/Delphi
- Sample programs included

LabVIEW® VIs

Angelo-LVIEW

Linux Platform

Fedora core 3, Kernel 2.6.22

ViewCreator™

ViewCreator assists developers in evaluating initial tests and functions.

Ordering Information

PCIe-RTV24
PCI Express® 4-CH real-time video capture card for standard cameras

PCI-RTV24
4-CH real-time video capture card for standard cameras

Introduction

General

The PCIe-RTV24/PCI-RTV24 acquisition board are designed without compromise for machine vision and video surveillance applications. They are the ideal devices for PC-based multiple-channel vision application.

The PCIe-RTV24 PCI Express® x1 lane frame grabber can capture simultaneously four analog video streams in real time. It accepts standard composite colors (PAL, NTSC) or monochrome video formats (CCIR, EIA).

The supported resolution is programmable and includes square-pixel (640 x 480 or 768 x 576) and broadcast resolution. Before captured images are transferred to the PC's memory, images can be scaled down using available selectable ratios.

Arbitrary cropping to regions of interest is possible. The PCIe-RTV24 generates bitmaps in all popular color formats such as RGB, YUV, planar, or packed.

System integrators also benefit from a watchdog for fault-tolerant applications and easy-to-use standard connectors.

Image Acquisition

- Frame Rate: 30 full-frame images acquired per second for each channel.
- Color Image: Color video format is compatible with the following composite video input formats: NTSC-M, NTSC-Japan, PCL-B, PALD, PAL-G, PAL-H, PAL-I, PAM-M, PAL-N and SECAM
- Monochrome Image: The monochrome video acquisition is compatible with CCIR and EIA (RS-170).
- Optional Scaling: The acquire images or portions of images can be optionally scaled:
  - Acquisition of a programmable area of interest
  - Scaling of the image (down to 1:16)
  - Adjustment of hue (for NTSC signals), contrast (0 to 200%), brightness and saturation (0 to 200% for U and V signals)
  - Automatic chrominance gain control

RTV-E4 Extension Board (Optional)

- Expandable up to 16 channels
- 10-pin ribbon cable to onboard 10-pin header connector for channel extension. Each header adds 4 video input channels.
- Three 10-pin header connectors onboard.

I/O Lines

The PCIe-RTV24/PCI-RTV24 is fitted with TTL compatible I/O lines, supporting 4 inputs, 4 outputs and 4 soft trigger lines with protection against overloads and electrostatic discharges.

Every line maybe configured as an input or output or can be used to trigger an acquisition or report an alarm condition.

RTV-I4 Isolated GPIO Board (Optional)

- General Purpose I/O Lines :
  - All I/Os are TTL compatible and support 4 inputs, 4 outputs, and 4 soft trigger lines.
  - Two on-board 10-pin header connectors.
  - The I/O lines are pulled high internally and have the following characteristics:

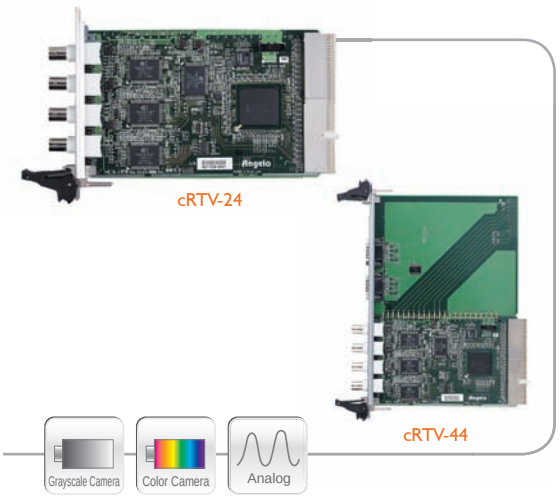
Voltage	Min.	Max.
Input High Voltage (20 μA)	2.0 V	5.25 V
Input Low Voltage (-0.2 μA)	0.0 V	0.80 V
Output High Voltage (-1.0 mA)	5.0 V	--
Output Low Voltage (100 mA)	--	0.50 V

Watchdog

A hardware watchdog is available on the PCIe-RTV24/PCI-RTV24. The watchdog is able to monitor the PC's application operation and will automatically reset the PC after a programmable inactivity time-out. This ensures a reliable operation of remote systems.

cRTV-24 / cRTV-44

3U/6U CompactPCI 4-CH Real-time Video Capture Boards



Introduction

General

The cRTV series is a CompactPCI acquisition board is designed without compromise for security and video surveillance applications. It's the ideal device for PC based multiple-channel digital video recording. This 64-bit, 66 MHz CompactPCI (including 32-bit and 33 MHz) frame grabber can capture simultaneously four analog video streams in real time. It accepts standard composite colors (PAL, NTSC) or monochrome video formats (CCIR, EIA).

The supported resolution is programmable and includes square-pixel (640 x 480 or 768 x 576) and broadcast resolution. Before captured images are transferred to the PC's memory, images can be scaled down using available selectable ratios.

Arbitrary cropping to regions of interest are possible. The RTV series generates bitmaps in all popular color formats such as RGB, YUV, planar or packed. System integrators also benefit from a watchdog for fault-tolerant applications and easy-to-use standard connectors.

Image Acquisition

- ◆ Frame Rate: 30 full-frame images acquired per second for each channel.
- ◆ Color Image: Color video format is compatible with the following composite video input formats: NTSC-M, NTSC-Japan, PCL-B, PALD, PAL-G, PAL-H, PAL-I, PAM-M, PAL-N and SECAM
- ◆ Monochrome Image: The monochrome video acquisition is compatible with CCIR and EIA (RS-170).
- ◆ Optional Scaling: The acquired images or portions of images can be optionally scaled:
- Acquisition of a programmable area of interest
- Scaling of the image (down to 1:16)
- Adjustment of hue (for NTSC signals), contrast (0 to 200%), brightness and saturation (0 to 200% for U and V signals)
- Automatic chrominance gain control

Channel Status LED

The cRTV series provide channel status is monitored by four dedicated LEDs.

I/O Lines (cRTV-44)

The cRTV-44 is fitted with TTL compatible I/O Lines, supporting 4 inputs, 4 outputs lines with protection against overloads and electrostatic discharges.

Features

- **Four color video digitizers operating in parallel**
- **Up to 120 fps in 64-bit, 66 MHz CompactPCI bus**
- **Color PAL/NTSC, monochrome CCIR/EIA camera support**
- **On-board TTL I/O lines**
- **User-friendly ViewCreator utility**
- **Channel status report LEDs**

Applications

- **PC-based surveillance systems**
- **Digital Video Recorder (DVR)**
- **Factory monitoring systems**
- **Machine vision inspection systems**
- **Scientific research instrumentation**
- **Medical research instrumentation**

Software Support

Windows® Platform
- Available for Windows® 2000/XP/XPe
- Available for Microsoft® DirectX®
- Recommended programming environments: C#/.NET/ VC++/VB/C++ Builder/Delphi
- Sample programs included

LabVIEW® VIs

Angelo-LVIEW

Linux Platform

Fedora core 3, Kernel 2.6.22

ViewCreator™

ViewCreator assists developers in quickly evaluating initial tests and functions.

Ordering Information

- **cRTV-44**
  6U CompactPCI 4-CH real-time video capture board
- **cRTV-24**
  3U CompactPCI 4-CH real-time video capture board

PCIe-FIW64

4-CH PCI Express® IEEE 1394b Frame Grabber

Grayscale Camera | Color Camera | PCI EXPRESS | 1394 TRADE ASSOCIATION | Digital

Overview

The PCIe-FIW64 is IEEE 1394b (FireWire 800) interface card designed for high speed computer-based machine vision application. The PCIe-FIW64 supports four 1394b (FireWire 800) ports for multiple 1394b device connections with data transfer rates up to 800 Mb/s, as found with most IEEE 1394b cameras.

The PCIe-FIW64 provides four isolated digital inputs and outputs to connect to external devices such a position sensor. The PCIe-FIW64 also includes four isolated programmable trigger output pulses to manage trigger events such as activating a strobe light.

Features

- **PCI Express® x4 compliant**
- **High-speed image transfer rates up to 3.2 Gbps**
- **Provides industrial screw lock connector**
- **Status LED for channel activation**
- **Four isolated digital inputs/outputs**
- **Four isolated TTL level programmable trigger output pulses**

Applications

- **Machine vision inspection systems**
- **Automatic optical inspection machineries**
- **Scientific research instrumentations**
- **Medical research instrumentations**

Software Support

- Windows® Platform
  - Available for Windows® Vista (32-bit)/XP

Ordering Information

- **PCIe-FIW64**
  4-CH PCI Express x4 IEEE 1394b interface card

Accessories

Cabling

- 1394b Cable
  4.5 M IEEE 1394b 9-pin cable with screw-lock connector

Specifications

IEEE 1394b Port	Four IEEE 1394b fully compliant cable ports at 100 Mb/s, 200 Mb/s, 400 Mb/s, and 800 Mbits/s.
	Fully supports provisions of IEEE P1394b-2002.
	Fully compliant with provisions of IEEE std 1394-1995 for a high performance serial bus and IEEE std 1394a- 2000.
Digital and Trigger I/Os	Four isolated digital inputs/outputs
	Four isolated trigger inputs/outputs
Isolated Voltage	1000 V @ 60 seconds
Form Factor	PCI Express® x4 interface
	(PCI Express® Base Specification, Revision 1.1 compliant)
Dimensions	129.5 x 111.15 mm (W x L)
Operating Environment	Temperature: 0°C to +55°C
	Humidity: 5% to 90%
Storage Environment	Temperature: 0°C to + 85°C
	Humidity: 0% to 95%
Power Requirements	+12 V (max.), 200 mA
	+3.3 V (max.), 2.5 A

I/O and trigger

Function	Electronic Specification
Isolated Digital Input	Photo Coupled Input x 4-CH
Input Voltage Range	0 to 25 V
Low Level	0 to 0.5 V
High Level	2 to 25 V
Isolated Digital Output	Photo Coupled Output x 4-CH
Load Voltage Range	3 to 24 V
Output Sink Current	80 mA (max.)
Output Voltage Drop	1.0 V (max.)
Leak Current	0.1 mA (max.)
Reverse Voltage	-6 V
Isolated Trigger Input	Photo Coupled Trigger Input x 4-CH
Input Voltage Range	0 to 25 V
Low Level	0 to 0.5 V
High Level	2.4 to 25 V
Polarity	Positive/Negative selectable
Minimum Pulse Width	0.1 msec
Isolated Trigger Out	Photo Coupled Trigger Output x 4-CH
Load Voltage Range	0 to 5 V
Output Sink Current	40 mA (max.)
Output Voltage Drop	0.4 V Max (@ 16 mA)
Trigger Out Control	
Trigger Delay	0 to 1000 ms selectable (1 ms step.)
Trigger Out Pulse Width	0.1msec to 50 ms selectable (0.1 ms step)
Polarity	Positive/Negative selectable
Enable Control	Enable/Disable

PCIe-FIW62

2-CH PCI Express® IEEE 1394b Frame Grabber

Introduction

The PCIe-FIW62 is an IEEE 1394b (FireWire 800) interface card which provides 2 high-speed FireWire 800 ports with data transfer rates up to 800 Mb/s on a PCI Express® x1 lane. The PCIe-FIW62 provides two direct-connect IEEE 1394b connectors with a screw-lock mechanism. These screw-lock connectors provide a reliable connection between PCIe-FIW62 and up to two IEEE 1394b cameras.

A 4-pin ATX power connector on the PCIe-FIW62 supports IEEE 1394b cameras that draw power directly from the frame grabber. Each port has a green LED on the front panel that will illuminate when the PCIe-FIW62 is connected to a IEEE 1394b camera for convenient identification of channel connection status.

IEEE 1394b

The IEEE 1394 and IIDC (DCAM) protocol, developed by the 1394 Trade Association are currently widely used for machine vision, IEEE 1394 standard, and IIDC protocol define the transmission mechanism, and communication specification, such as the image stream format.

Benefits of IEEE 1394b

- Easy maintenance, "plug-and-play" operation
- Reduced wiring, powered over cable capable
- Less CPU overhead, DMA (Direct Memory Access) to host PC memory
- Multiple devices connection, multiple devices connection via the networked architecture

Features

- **PCI Express® x1 compliant**
- **2-CH IEEE 1394b (FireWire 800) ports**
- **High-speed image transfer rates up to 800 Mb/s**
- **Industrial screw lock connector**
- **Channel status LEDs**
- **Power supplied to the IEEE 1394b connectors**

Applications

- **Machine vision inspection systems**
- **Automatic optical inspection machineries**
- **Scientific research instrumentations**
- **Medical research instrumentations**

Software Support

- Windows® Platform
  - Available for Windows® Vista (32-bit)/XP

Ordering Information

- **PCIe-FIW62**
  2-CH PCI Express® x1 IEEE 1394b interface card

Accessories

Cabling

- 1394b Cable
  4.5 M IEEE 1394b 9-pin cable with screw-lock connector

Specifications

Video Input	Differential signals
	IEEE 1394b 9-pin connector
Form Factor	Half length PCI Express® x1 compliant
Dimension	78.6 x 111.15 mm (W x L)
Power Consumption	0.22 A @ +3.3 V
	Power provided to IEEE 1394 connection, 1 A @ +12 V / per port (over current protection)

PCIe-CPL64

2-CH PCI Express® PoCL Frame Grabber

Overview

PCIe-CPL64 is a PoCL (Power over Camera Link®) frame grabber that is based on the PCI Express® x4 interface, and supports two-channel Camera Link "base" configurations, multi-tap area and line scan cameras. The PCIe-CPL64 frame grabber strikes a perfect balance between performance and cost. It is capable of simultaneously image acquisition from two completely independent Camera Link base configuration cameras, and supports image transfers rates up to 512 MB/s.

PoCL Technology™

The PoCL (Power over Camera Link®) standard allows the camera link cable to supply power to the camera through the Camera Link connector without losing backward compatibility with the previous Camera Link® standard, this solution is particularly suitable for a small camera.

Benefits of PoCL™

- Easy installation
- Reduce wiring (Single cable for digital I/F, and power)
- Reduce camera size

Features

- **PCI Express® x4 compliant**
- **Supports 2-CH Camera Link® "base" configuration**
- **Acquisition pixel clock rates up to 85 MHz**
- **PoCL compliant with auto detection.**
- **128 MB of 200 MHz DDR SDRAM for acquisition**
- **4 TTL Digital Input/Output, and 2 trigger Input**
- **Supports 64-bit memory addressing**
- **Two serial communication ports**

Applications

- PCB/FPD/Wafer/Solar Cell surface inspections
- Medical research instrumentations

Software Support

- Windows® Platform
  - Available for Windows® Vista (64/32-bit)/XP

Ordering Information

- **PCIe-CPL64**
  2-CH PCI Express® x4 PoCL frame grabber
- **Accessory**
  - Cabling
  - 1394b Cable
  - 5 M IEEE 1394b 9-pin cable with screw-lock connector

Specifications

Video Input	Camera Link® LVDS deferential signals
	Dual Base Configuration: Using two MDR26 pins connectors
	Maximum camera link data rate: 85 MHz
	Supports PoCL and standard Camera Link interface and auto detect
Camera Control	LVDS camera control: CC1 to CC4 control signal in two MDR26 pins connectors
External Signal Input	External RS422 level A, B, Z phase deferential signal for encoder input
	Two channels TTL level Line /Area trigger input
	Two channels TTL level Line trigger start input
	Two channels TTL level Exposure output
	Line trigger bypass output (encoder mode only)
	Four channels Digital input , Four channels Digital output
Power over Camera Link® (PoCL)	Power line output per channel : DC +12 V, Max. 1 A
	Over-current Protection function, auto detect non-PoCL cable or PoCL camera connected.
Form Factor	PCI Express® x4 compliant
Dimensions	167.65 x 111.15 mm (W x L)
Operating Environment	Temperature: 0°C to +50°C
	Humidity: 5% to 90% RHNC
Storage Environment	Temperature: 0°C to +70°C
	Humidity: 0 to 95% RHNC
Power Requirements	+12 V max 0.5 A, +3.3 V max 1.6 A

PCIe-CML64

Single Channel PCI Express® Camera Link® Frame Grabber

Introduction

The PCIe-CML64 is a PCI Express® x4 compliant Camera Link® frame grabber that supports one channel base/medium/full configuration, multi-tap area, and line scan color and monochrome Camera Link cameras.

The PCIe-CML64 series utilizes an FPGA design for greater image acquisition flexibility, higher performance, and improved pre-processing functionality (such as pixel gain/offset correction).

The PCIe-CML64 provides a 128 MB frame buffer to buffer and rearrange pixel data from the camera, before passing it to the PCI Express® bus DMA, a feature ideal for industrial machine vision applications, such as high speed inspection and high resolution acquisition.

Scanning modes supported by the PCIe-CML64 include using a linescan camera in the following modes:
· Page trigger – triggered events trigger the acquisition of a given number of lines (an area acquisition system)
· Line trigger – the system continuously acquires and transfers lines from the camera based on the line trigger signal (no lines are skipped)
· Free-run – image acquisition is controlled by software, without any trigger input

Features

- **PCI Express® x4 compliant**
- **Supports one channel Camera Link® in base/medium/full configuration**
- **High-speed image transfer rates up to 680 MB/sec**
- **Acquisition pixel clock rates up to 85 MHz**
- **128 MB DDR SDRAM on-board memory**
- **2 TTL I/O, differential/TTL trigger input**
- **Serial communication via Camera Link®**

Applications

- PCB/FPD surface inspections
- Medical research instrumentations

Software Support

Windows® Platform

- Available for Windows® Vista (64/32-bit)/XP
- Recommended programming environments: C#/.NET/ VC++ 6.0/VB 6.0/BCB 6.0

Ordering Information

- **PCIe-CML64FB**
  PCI Express® x4 Camera Link® frame grabber
- **PCIe-CML64FP**
  PCI Express® x4 Camera Link® frame grabber with FPGA image pre-processing

Specifications

Video Input	Camera Link® LVDS deferential signals
	Base configuration: via a Data1 MDR26 26-pin connector
	Medium and full configuration: via Data1 and Data2 MDR26 26-pin connectors
	Maximum Camera Link® data rate: 85 MHz
Camera Control	RS-422 signal: CC1-CC4 control signals in the Data1MDR26 26-pin connector
External Signal Input	RS-422 signal: external A, B, Z phase deferential signal inputs, maximum frequency: 1 MHz
	External page trigger
	One channel digital input; one channel digital output
Form Factor	Half length PCI Express® x4 compliant
Dimensions	174.62 x 111.15 mm (W x L)
Camera Support	Base cameras: 3 x 8-bit/tap, 1 x 16-bit/tap, 2 x 12-bit/tap
	Medium cameras: 4 x 8-bit/tap, 4 x 12-bit/tap
	Full cameras: 8-bit/tap
Power Consumption	0.6 A @ +12 V, 2 A @ +3.3 V

PCIe-GIE62

2-CH Gigabit Ethernet Vision Interface Card with Trigger, and I/O

Introduction

ADLINK's PCIe-GIE62 is a PCI Express® x4 lane, Gigabit Ethernet (GbE) network interface card (NIC), which supports 2 independent Gigabit Ethernet ports for multiple Gigabit Ethernet Vision device connections with data transfer rates up to 1000 Mb/s, as found with most Gigabit Ethernet Vision cameras. The PCIe-GIE62 provides two isolated digital inputs and outputs for connecting to external devices such position sensors. The PCIe-GIE62 also includes two isolated programmable trigger output pulses to manage trigger events such as activating a strobe lighting.

Features

- **PCI Express® x4 compliant**
- **Supports two independent GbE ports**
- **Supports jumbo frames (9 KByte)**
- **Provides Industrial screw lock connector**
- **2 isolated digital inputs/outputs**
- **2 isolated TTL level programmable trigger output pulses**
- **Supports windows XP/XP Embedded/Vista**

Applications

- Machine vision inspection systems
- Scientific research instrumentations
- Medical research instrumentations
- Intelligent transportation systems

Software Support

Windows® Platform

- Available for Windows® Vista (32-bit)/XP

Ordering Information

PCIe-GIE62
2-CH Gigabit Ethernet Vision frame grabber

Specifications

Ethernet Port	Two full-integrated Gigabit Ethernet Media Access Control (MAC) and physical layer (PHY) ports.
	Gigabit Ethernet Controller provides a standard IEEE 802.3 Ethernet interface for 1000 BASE-T, 100 BASE-TX, and 10 BASE-T applications (802.3, 802.3 u, and 802.3 ab).
	9 kB jumbo frame support
I/O Trigger Function	2 isolated digital inputs
	2 isolated digital outputs
	2 isolated trigger inputs
	2 isolated trigger outputs
Isolated Voltage	1000 V @ 60 seconds
Form Factor	PCI Express® x4
Dimensions	129.5 x 111.15 mm (W x L)
Operating Environment	Temperature: 0°C to +55°C
	Humidity: 5% to 90% RHNC
Power Requirements	+12 V max @ 0.2 A, +3.3 V max @ 1.5 A

PCI-MPG24

4-CH MPEG4 Hardware Real-time Video Compression Card

Features

- **4-CH MPEG4 hardware video encoder**
- **Real-time Full D1 video encoding up to 120 fps**
- **Supports real-time video raw data preview**
- **On-board 64 MB SDRAM memory buffer**
- **On-board TTL I/O lines**
- **Build-in watchdog timer**
- **Security protection circuit**

Applications

- Digital Video Recorder (DVR)
- Intelligent traffic monitoring systems
- Remote surveillance systems
- Factory monitoring systems

Software Support

Windows® Platform

- Available for Windows® 2000/XP/XPe
- Available for Microsoft® DirectX®
- Recommended programming environments: C#/.NET/ VC++/VB/C++ Builder/Delphi
- Sample programs included

Linux Platform

- Red Hat 9.0, Kernel 2.4.23

ViewCreator™

ViewCreator assists developers in evaluating initial tests and functions.

Ordering Information

PCI-MPG24
4-CH MPEG4 hardware real-time video compression card

Introduction

The PCI-MPG24 is a MPEG4 hardware video compression card that provides 4 channels of real-time Full D1 MPEG4 video encoding and decoding with a preview function for digital video surveillance applications. This 32-bit, 33 MHz PCI bus frame grabber simultaneously captures and encodes four video analog streams in real time. It accepts standard composite color (PAL, NTSC) or monochrome video formats (CCIR, EIA) cameras inputs. Each PCI-MPG24 card has a unique hardware ID number. System integrators can design protections to lock their system product. System integrators will benefit from a watchdog timer (for fault-tolerant applications) and easy-to-use standard connectors.

Real-time Video Encoding
Supports real-time Full D1, quarter or downscale video size encoding. Full D1 video format:

- NTSC (720 x 480) at 30 fps per channel, 4-CH total up to 120 fps
- PAL (720 x 576) at 25 fps per channel, 4-CH total up to 100 fps

Adjustable Video Quality
Bit and frame rates are adjustable to fit variable bandwidths, as seen in remote Internet applications.I, IP, IBP, and IBBP GOP structures are programmable for enhanced video quality.

Real-time Video Encoding

- Single Channel: real-time preview at VGA resolution
- 4-CH: simultaneously real-time preview at quad resolution

Video Decoding
Enhanced software decodes video for playback or remote client monitoring. The PCI-MPG24 card is not needed for playback.

Video Saving
The PCI-MPG24 saves video in the AVI video file format.which can easily be viewed on standard video player software (such as Microsoft® Windows® Media Player®).

I/O Lines
TTL compatible I/O lines are provided, supporting 4 inputs, 4 outputs, and one +5 V output for device control.

Watchdog Timer
A hardware watchdog is available on the PCI-MPG24.The watchdog is able to monitor the PC's application operation and will automatically reset the PC after a programmable inactivity time-out.This ensures a reliable operation of remote systems.

Minimum System Requirements

- Platform: Intel® Pentium® III, 850 MHz CPU, and 512 MB SDRAM or above
- VGA Display: AGP 4X above (VIA or SiS VGA chipset solution not recommended)
- Display Setting: 800 x 600 above resolution, 16-bit above color format
- OS: Windows 2000 Professional with SP4 or Windows XP Professional with SP1
- Software Requirement:
  - For end users: Microsoft DirectX 9.0 End-User Runtime
  - For developers: Microsoft DirectX 9.0 SDK
  - DivX Video Decoder (Optional)

As software decoding consumes system resources, a system platform upgrade must be made for system decoding.

GEME-X52000 / GEME-X43000

4-CH Real-time Video Capture Compact Vision Platforms

GEME-X52000

GEME-X43000

GEME-W52000

Model Name		GEME-X52000	GEME-W52000
Computing Power	CPU	Low Voltage Intel® Pentium® M 1.4 GHz	Ultra Low Voltage Intel® Celeron® M 1.0 GHz
	Cache	1 MB/2 MB on-die Advanced Transfer Cache (ATC)	Zero Cache
	System Memory	One SODIMM socket for up to 1 GB DDR333	One SODIMM socket for up to 1 GB DDR333
	Chipset	Intel® 852GME Graphics and Memory Controller Hub (GMCH)	Intel® 852GME Graphics and Memory Controller Hub (GMCH)
		Intel® I/O Controller Hub 4 (ICH4)	Intel® I/O Controller Hub 4 (ICH4)
	VGA	On-board VGA controller built-in AGP (3D hyper pipelined architecture)	On-board VGA controller built-in AGP (3D hyper pipelined architecture)
		Up to 1600 x 1200 in 32-bit color at 85 Hz refresh rate	Up to 1600 x 1200 in 32-bit color at 85 Hz refresh rate
		Video memory sharing from main memory with Intel® Dynamic Video Memory Technology (DVMT)	Video memory sharing from main memory with Intel® Dynamic Video Memory Technology (DVMT)
		Up to 64 MB of dynamic video memory allocation	Up to 64 MB of dynamic video memory allocation
I/O	USB	2 USB ports, USB 2.0 compliant	2 USB ports, USB 2.0 compliant
	IEEE 1394 (Optional)	Texas Instruments TSB43AB23 1394a-2000 OHCI PHY/link-layer controller 2 IEEE 1394 ports	Texas Instruments TSB43AB23 1394a-2000 OHCI PHY/link-layer controller 2 IEEE 1394 ports
	Ethernet	Intel® 82562EM 10BaseT/100BaseT x 1	Intel® 82562EM 10BaseT/100BaseT x 1
	Super I/O Chipset	Chipset Winbond® W83627HF	Chipset Winbond® W83627HF
	Hardware Monitoring	Built-in Winbond® W83627HF, monitoring CPU temperature, voltage and battery, +3.3 V, +5 V, +12 V voltage	Built-in Winbond® W83627HF, monitoring CPU temperature, voltage and battery, +3.3 V, +5 V, +12 V voltage
	COM Port	COM1/COM2: 16550 UART compatible ports with RS-232 interface, COM2 also supports RS-422, RS-485	COM1/COM2: 16550 UART compatible ports with RS-232 interface, COM2 also supports RS-422, RS-485
	Parallel Port	One high-speed parallel port, SPP/EPP/ECP mode	One high-speed parallel port, SPP/EPP/ECP mode
	Keyboard/Mouse	Combined PS/2 type mini-DIN connectors	Combined PS/2 type mini-DIN connectors
	Watchdog Timer	Time-out timing selectable, 1-255 seconds	Time-out timing selectable, 1-255 seconds
System	Power Supply	AC input: 100 V_{AC} to 220 V_{AC}, Max. output : +5 V, 11.5 A; +12 V, 3 A; -12 V, 0.5 A	AC input: 100 V_{AC} to 220 V_{AC}, Max. output : +5 V, 11.5 A; +12 V, 3 A; -12 V, 0.5 A
		DC input (optional): 10 V_{DC} to 30 V_{DC}, Max. input current: 13 A at 10 V_{DC}, Max. output: +5 V, 10 A; +12 V, 1.5 A; -12 V, 0.3 A	DC input (optional): 10 V_{DC} to 30 V_{DC}, Max. input current: 13 A at 10 V_{DC}, Max. output: +5 V, 10 A; +12 V, 1.5 A; -12 V, 0.3 A
	Dimensions	183 x 140 x 95.36 mm (wall mount kit not included) [16.84 mm(H) for each extension kit]	183 x 140 x 95.36 mm (wall mount kit not included) [16.84 mm(H) for each extension kit]
	Power Consumption	With 512 MB DDRAM +5 V, 4.0 A; +12 V, 300 mA Test conditions: (1) CPU 100 % loading (2) No HDD, CD ROM, extension module	With 512 MB DDRAM +5 V, 4.0 A; +12 V, 300 mA Test conditions: (1) CPU 100 % loading (2) No HDD, CD ROM, extension module
	Storage	50-pin socket for CompactFlash Type I/II	50-pin socket for CompactFlash Type I/II
		One 44-pin IDE HDD (optional)	One 44-pin IDE HDD (optional)
	Operating System	Windows® XP/Vista (32-bit), Fedora 3 with kernel 2.6.9	Windows® XP/Vista (32-bit), Fedora 3 with kernel 2.6.9
Environment	Operating Temp.	-10˚C to +50˚C	-10˚C to +50˚C
	Humidity	0% to 90%	0% to 90%
Camera Interface	Video Format	Color: PAL/NTSC, Monochrome: CCIR/EIA, Interlaced	Color: PAL/NTSC, Monochrome: CCIR/EIA, Interlaced
	Resolution	VGA	VGA
	Frame Rate	30 fps	30 fps
	Video Input	BNC x 4	BNC x 4

GEME-W52000

4-CH Double-Speed, On-the-fly Inspection Compact Vision Platform

Introduction

Utilizes ADLINK's in-depth Experience in Vision Applications
- Machine vision, surveillance, intelligent transportation systems

Based on Extensive Research on Ideal System Requirements for Vision Applications
- Compact, fanless, anti-vibration and anti-shock

Flexible, and Expandable Design for Machine Automation, Factory Automation
- AC/DC power input, optional remote I/O, and motion control modules

Applications

GEME-X52000/GEME-X43000
- Off Line Inspection
- Digital Video Recorder
- Intelligent Transportation System
- Alignment

GEME-W52000
- In Line Inspection
- 2D Code Reader
- Edge Inspection
- Defect Inspection

Model Name		GEME-X43000
Computing Power	CPU	Low Voltage Intel® Pentium® M 1.4 GHz
	Cache	1 MB/2 MB on-die Advanced Transfer Cache (ATC)
	System Memory	One SODIMM socket for up to 1 GB DDR333
	Chipset	Intel® 855GME Graphics and Memory Controller Hub (GMCH) Intel® I/O Controller Hub 4 (ICH4)
	VGA	On-board VGA controller built-in AGP (3D hyper pipelined architecture) Up to 1600 x 1200 in 32-bit color at 85 Hz refresh rate Video memory sharing from main memory with Intel® Dynamic Video Memory Technology (DVMT) Up to 64 MB of dynamic video memory allocation
I/O	USB	2 USB ports, USB 2.0 compliant
	IEEE 1394 (Optional)	Texas Instruments TSB43AB23 1394a-2000 OHCI PHY/link-layer controller 2 IEEE 1394 ports
	Ethernet	Intel® 82562EM 10BaseT/100BaseT x 1
	Super I/O Chipset	Chipset Winbond® W83627HF
	Hardware Monitoring	Built-in Winbond® W83627HF, monitoring CPU temperature, voltage and battery, +3.3 V, +5 V, +12 V voltage
	COM Port	COM1/COM2: 16550 UART compatible ports with RS-232 interface, COM2 also supports RS-422, RS-485
	Parallel Port	One high-speed parallel port, SPP/EPP/ECP modes
	Keyboard/Mouse	Combined PS/2 type mini-DIN connectors
	Watchdog Timer	Time-out timing selectable, 1-255 seconds
System	Power Supply	AC input: 100 V_{AC} to 220 V_{AC}, Max. output : +5 V, 11.5 A; +12 V, 3A; -12 V 0.5 A DC input (optional): 10 V_{DC} to 30 V_{DC}, Max. input current: 13 A at 10 V_{DC}, Max. output: +5 V, 10 A; +12 V, 1.5 A; -12 V, 0.3 A
	Dimensions	183 x 140 x 95.36 mm (wall mount kit not included) [16.84 mm(H) for each extension kit]
	Power Consumption	With 512 MB DDRAM +5 V 4.0 A, +12 V 300 mA Test conditions: (1) CPU 100 % loading (2) No HDD, CD ROM, extension module
	Storage	50-pin socket for CompactFlash Type I/II One 44-pin IDE HDD (optional)
	Operating System	Windows® XP, Windows® Vista (32-bit)
Environment	Operating Temp.	-10℃ to +50℃
	Humidity	0% to 90%
Camera Interface	Video Format	Progressive or interlaced single-tap
	Resolution	Up to SXGA (1028 x 1024)
	Frame Rate	60 fps
	Video Input	Hirose 12-pin female x 4